



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## Agropyron tenerum and its allies

CHARLES VANCOUVER PIPER

### AGROPYRON TENERUM

Much confusion has prevailed in regard to *Agropyron tenerum* Vasey, and the supposedly different *A. pseudorepens* Scribn. & Smith and *A. Novae-Angliae* Scribn.

The problems surrounding these three supposed species can perhaps best be made clear by a consideration of the type specimens upon which they are based, discussing only such points as have been used in the segregation of the supposed different species and subspecies. All are tall densely caespitose grasses, which only rarely produce stolons.

AGROPYRON TENERUM Vasey, Bot. Gaz. 10: 258. 1885.

The type of this is from Fort Garland, Colorado, collected by Dr. Geo. Vasey. The specimen is about 90 cm. tall, with rather short, narrow, slightly scabrous, involute leaf-blades, and slender spikes 10–15 cm. long, with small appressed spikelets. The joints of the rachilla are appressed-puberulent. The lowermost sheaths are slightly puberulent.

AGROPYRON TENERUM MAJUS Vasey, Contr. U. S. Nat. Herb. 1: 280. 1893.

Type from Oregon, probably Union County, *Cusick* 1134, collected in 1884.

This differs from the type of *A. tenerum* only in having flat leaf-blades, scabrous on both sides, 3–6 mm. broad, and somewhat stouter denser spikes 12 cm. long.

AGROPYRON TENERUM LONGIFOLIUM Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 30. 1897.

The type of this is Howell's no. 256, collected near Grant's Pass, Oregon, in 1887. It is characterized by rather long, loosely involute, quite smooth leaf-blades, and inordinately loose spikes, 20–25 cm. long. The rachilla is appressed-puberulent. The short awns are better developed than in the types of *A. tenerum* or *A. tenerum majus*.

AGROPYRON TENERUM CILIATUM Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 30. 1897.

The type of this is from Duluth, Minnesota, collected by Dr. Geo. Vasey, August 1, 1880. It is characterized by rather thin and smooth leaf-blades 4–6 mm. broad, and pubescent sheaths.

The rachilla of this type is quite hairy, but it may here be remarked that the character of hairy sheaths is not constantly associated with that of hairy rachilla. Several of the specimens referred to *A. ciliatum* by Scribner & Smith on account of the hairy sheaths have appressed-puberulent rachillae.

The name *ciliatum* is preoccupied in *A. Richardsonii ciliatum* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 29. 1897.

AGROPYRON PSEUDOREPENS Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 30. 1897.

No type of this species was indicated either in the original publication, or in the herbarium, by its authors. The first cited specimen, and therefore the type, is from Texas, collected by Neally in 1889. This is quite the same as the type of *A. tenerum*, with slightly longer and less involute blades, and a rather loose spike.

The specimen from which the *fig. 592* (U. S. Dept. Agr. Div. Agrost. Bull. 17:) was drawn, is Rydberg's 2018 from Kearney, Nebraska. This has flat blades, 4–7 mm. broad, and rather stout spikes 10–12 cm. long. The rachilla and the callus of this are hirsute.

Neither of these specimens have rootstocks, nor extra-vaginal innovations, nor, indeed, do any of the specimens cited in the original description.

AGROPYRON PSEUDOREPENS MAGNUM Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 30. 1897.

The type specimen is Rydberg's 2401 from Enterprise, Colorado, collected August 19, 1895. It is characterized by its robust size, 1–1.5 m. high, broad flat leaves, stout spikes and large spikelets. These differences may all be due primarily to vegetative vigor. The rachilla is appressed-puberulent.

AGROPYRON NOVAE-ANGLIAE Scribn. in Jones, Contr. Bot. Vermont 8: 103. 1903.

Type specimen collected on Willoughby Mountain, Vermont, by Grout & Eggleston, July 2, 1894.

This plant is about 90 cm. high, has flat blades, scabrous on both sides, smooth sheaths, rather slender spikes 10–17 cm. long, and hairy callus and rachilla.

The tall habit and longer leaf-blades are relied upon by the author of the species to distinguish it from *A. violaceum* Lange, and the broad leaves and hairy rachilla from *A. tenerum* Vasey.

It will be noted that the types of two of the above plants, namely *A. tenerum ciliatum* and *A. Novae-Angliae*, have hairy rachillae; the remainder have the rachilla merely puberulent.

Taking these characters which have been pointed out and relied upon as distinctive, the following classification is possible, based partly on general interpretation, partly on types.

Rachilla hairy.	
Sheaths pubescent.	<i>A. tenerum ciliatum</i> .
Sheaths smooth.	<i>A. Novae-Angliae</i> .
Rachilla scabrous or puberulent.	
Sheaths pubescent.	Unnamed.
Sheaths smooth.	
Leaf-blades narrow or involute; spike slender.	
Spike 10–15 cm. long; leaf-blades rather short.	<i>A. tenerum</i> .
Spike 20–25 cm. long; leaf-blades long.	<i>A. tenerum longifolium</i> .
Leaf-blades flat, spike a little stouter.	
Stems 30–100 cm. high; blades 12–20 cm. long.	<i>A. pseudorepens</i> .
Stems 100–150 cm. high; blades 20–30 cm. long; spike very stout, somewhat one-sided.	<i>A. pseudorepens magnum</i> .

Such a classification is quite artificial. The leaf-blade character seems entirely worthless, as all possible intergrades occur in large percentage.

To determine the value of the hairy-rachilla character all the specimens with this peculiarity were selected from among the specimens labelled *A. tenerum* and *A. pseudorepens*, about one-fourth of each being thus distinguished. Comparatively little difficulty was experienced in deciding between appressed-puberulent and hirsute rachillae, but nevertheless puzzling intermediates occur.

The specimens thus selected showed all the variations as to leaf-blades and habit shown by the remainder, and furthermore the two lots were practically coextensive in distribution.

We were quite unable to find any other character associated with a hairy rachilla, and therefore believe it to be wholly illusive as a specific distinction.

The multiplying of names based on varying combinations of these slight characters seems to us undesirable. We would interpret the value of these characters practically by the following arrangement :

**A. TENERUM** Vasey.

*A. tenerum majus* Vasey.

*A. pseudorepens* Scribn. & Smith.

*A. Novae-Angliae* Scribn.

**A. tenerum trichocoleum** nom. nov.

*A. tenerum ciliatum* Scribn. & Smith.

**A. TENERUM LONGIFOLIUM** Scribn. & Smith.

**A. tenerum magnum** (Scribn. & Smith).

*A. pseudorepens magnum* Scribn. & Smith.

#### AGROPYRON BIFLORUM

AGROPYRON BIFLORUM (Brign.) R. & S. Syst. 2 : 760. 1817.

*Triticum biflorum* Brign. Fasc. Rar. Pl. Foroj. 18. 1810.

*Triticum violaceum* Hornem. Fl. Dan. pl. 2044. 1832.

*Agropyron violaceum* Lange, Consp. Fl. Groenl. 155. 1880.

Following Ascherson & Graebner (Syn. Fl. Mitteleur.), we take up the above older name for what has usually been called *Agropyron violaceum*. This species is distinguished with some difficulty from *A. tenerum*. The characters of the two species may be thus contrasted :

*A. biflorum* : Florets 2-5 ; lower empty glume usually 3-nerved ; flowering glume usually broadest above the middle, rather soft in texture ; joints of the rachilla usually hairy ; spikes dense, seldom exceeding 4 cm. in length ; leaf-blades flat, soft, usually short and rather broad ; upper sheaths often inflated.

*A. tenerum* : Florets 3-7 ; lower empty glume usually 5-nerved ; flowering glume usually broadest below the middle, firm in texture ; joints of the rachilla usually puberulent ; spikes often loose, usually 5-20 cm. long ; leaf-blades flat or involute, elongate ; upper sheaths not inflated.

None of the above differences is constant, but they serve fairly

well to distinguish the species. The material from the Rocky Mountains at rather high elevations is, however, especially puzzling, apparently completely connecting the two species.

We would refer *A. brevifolium* Scribn. to *A. biflorum*.

The two subspecies of *A. biflorum* described by Scribner & Smith are readily distinguishable, and perhaps worthy of specific rank. They are **Agropyron biflorum latiglume** (*A. violaceum latiglume* Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. 4: 30. 1897) with the flowering glumes short-pubescent, and **Agropyron biflorum andinum** (*A. violaceum andinum* Scribn. & Smith, *loc. cit.*) with the flowering glumes long-awned.

BUREAU OF PLANT INDUSTRY,

UNITED STATES DEPARTMENT OF AGRICULTURE.